New Boraginaceae from Tropical America 2: *Tournefortia vasquezii*, a New Species from Peru

James S. Miller
Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166-0299, U.S.A.

ABSTRACT. *Tournefortia vasquezii* J. S. Miller is described from Cajamarca, Peru. It is a distinctive species with setaceous sepals, 4–6 mm long, and its unusual bullate leaves are unique in the genus. While its relationships within the genus are not clear, it shares its shrubby growth form, setaceous sepals, ovate corolla lobes, and elongate styles with *Tournefortia spicata* J. S. Miller and *T. restrepoae* J. S. Miller, other understory species of mid-elevation Andean forests.

The genus *Tournefortia* L. occurs throughout the tropics, but is nearly absent in Africa and only sparsely represented in Indian Ocean islands and tropical Asia. The majority of its more than 150 species occur in the Neotropics (Johnston, 1930, 1935a, 1935b; Miller, 1988). South America, particularly the northern Andes, is especially rich in species of *Tournefortia*. Macbride (1960) recognized 22 species of *Tournefortia* in the *Flora of Peru*, Brako (1993) increased that number to 26, and the species described below is another of many narrowly distributed endemics from mid-elevation Andean forests, some of which have been recently described (Miller, 1989, 1995, 1997).

The genus has largely been ignored in modern times and only addressed in floristic studies. The most modern treatments available for the South American species are from Johnston (1930, 1935a), neither of which covers the Andes, the center of diversity for the genus. Ellsworth P. Killip (unpublished) prepared a nearly complete manuscript treating the Andean species, several versions of which exist in the Smithsonian Institution, but this was never completed and published. The genus *Tournefortia* comprises three sections: *T.* sect. *Messerschmidia* (L.) DC., a group of three unusual species with corky exocarps, *T.* sect. *Cyphocyema* I. M. Johnston, a group of perhaps a dozen Neotropical species characterized by distinctly four-lobed fruits, and *T.* sect. *Tournefortia*, a rather homogeneous, pantropical section of more than 100 species.

Tournefortia vasquezii J. S. Miller, sp. nov. TYPE: Peru. Cajamarca: San Ignacio Province, San Jose de Lurdes, Santo Tomas, bosque primario, 4°55′S, 78°50′W, elev. 2200 m, 15 jun. 1995, *R. Vasquez, C. Diaz & A. Torres 20220* (holotype, MO 4926847). Figure 1.

Frutex sciophilus, ramulis pubescentibus. Folia alterna; lamina elliptica, 12–21.5 cm longa, 7–9.8 cm lata, apice acuminata, base cuneata ad acutam margine irregulariter et minute serrulata, bullata, areolis elevatis in trichomis terminantibus; petiolus 4–15 mm longus, supra canaliculatus, pubescens. Inflorescentia terminalis ex cyma dichotoma; pedicelli ca. 0.5 mm longis inter se 1–2 mm distantes. Flos sepalis setaceis 4–6 mm longis; corolla alba, tubuliformis, 6–8 mm longa, lobulis late ovatis, ca. 2 mm longis; antherae lanceoloideae, ca. 2 mm longae; stylus ca. 1.5 mm longus; stigma conoideum. Fructus ignotus.

Soft-stemmed understory subshrub 0.3 m tall, the twigs rough and densely pubescent. Leaves alternate; leaf blades elliptic, 12–21.5 × 7–9.8 cm, acuminate at the apex, cuneate to acute at the base, minutely and irregularly serrulate along the margin, the teeth uneven in shape, often ending in a trichome or with an appressed trichome arising from the center of the upper surface of each tooth, the adaxial surface glabrous and smooth along the veins, bullate between the veins, each areole with 1 to 5 raised bullae, each terminating in an appressed to spreading, siliceous hair 0.6–1.2 mm long, the abaxial surface sparsely, but evenly, puberulent, the hairs curved, less than 0.5 mm long, the surface invaginated beneath the raised bullae of the adaxial surface, the venation brochidodromous, the midrib impressed above, the secondary veins 7 to 9; petioles 4–15 mm long, canaliculate on the adaxial surface, rough and densely pubescent. Inflorescence a terminal, once-dichotomously branched cyme, the branches ca. 2 cm long, the peduncle ca. 2 cm long, pubescent. Flowers bisexual, borne 1–2 mm apart on densely pubescent, short pedicels ca. 0.5 mm long; sepals setaceous, ± equal in length, 4–6 mm long, with scattered, appressed to spreading curved hairs; corolla white, tubular, 6–8 mm long, sparsely appressed pubescent on the exterior surface, the lobes broadly ovate, ca. 2 mm long, ca. 2 mm wide, crenulate on

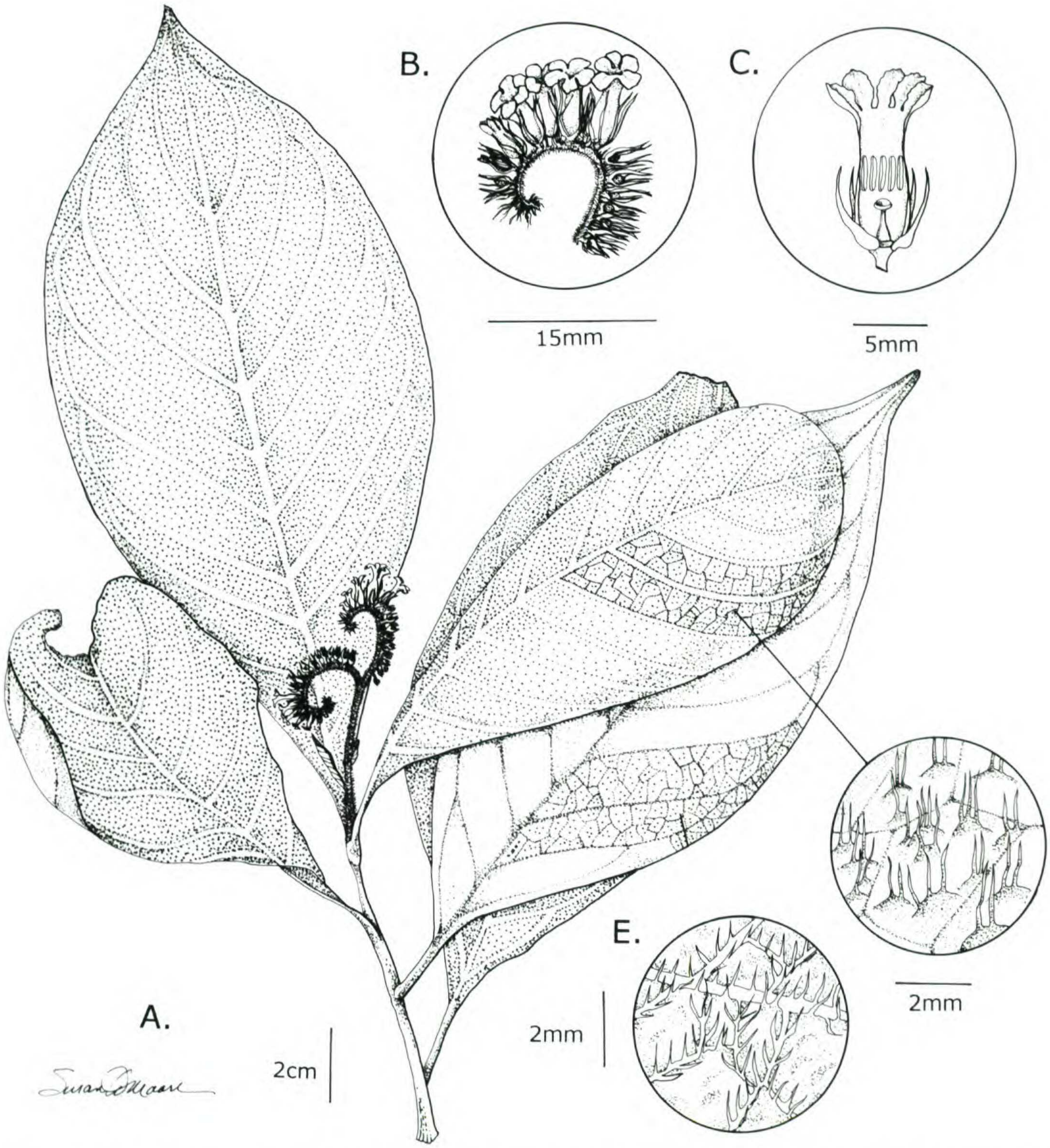

Figure 1. *Tournefortia vasquezii* J. S. Miller. —A. Flowering branch. —B. Inflorescence. —C. Flower showing ovary with short style and opened corolla tube with inserted anthers. —D. Adaxial leaf surface. —E. Abaxial leaf surface. (All from *Vasquez et al. 20220*, MO.)

the margin; anthers borne ca. 4 mm above the base of the corolla tube, sessile, attached basally, lanceoloid, ca. 2 mm long, the connective prolonged in a short sterile projection distally; ovary ovoid, ca. 1 mm long, the style ca. 1.5 mm long, the stigma depressed conical, the non-receptive apical portion only slightly elevated above the annular receptive tissue. Fruits unknown.

Tournefortia vasquezii is known only from the type, which was collected in primary wet montane forest in Cajamarca. The species is named in honor of Rodolfo Vasquez, whose collections and research have done so much to add to our knowledge of Peruvian plants.

Tournefortia sect. *Tournefortia* is a large, rather homogeneous section, and relationships of its constituent species are poorly understood. *Tournefortia vasquezii* is very distinct and is easily recognized by it bullate leaf surface, a character that is unusual in the genus. It is perhaps most closely related to *T. restrepoae*, a Colombian species with which it shares elongate, setaceous sepals and el-

evated areoles. However, the leaf surface of *T. vasquezii* is much more distinctively bullate, it has a terminal, rather than internodal inflorescence, and its flowers are borne on pedicels ca. 0.5 mm long, rather than the 1.5–4-mm pedicels of *T. restepoae*. Its long setaceous sepals are also an unusual feature in the genus, but most other species with this feature share few other characters with *T. vasquezii*. *Tournefortia spicata* J. S. Miller, another Colombian understory species with elongate, setaceous sepals, differs in its smoother leaf surface, dense inflorescence, and longer corollas.

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Literature Cited

Brako, L. 1993. Boraginaceae. *In*: L. Brako & J. L. Zarucchi (editors), Catalogue of the Flowering Plants and Gymnosperms of Peru. Monogr. Syst. Bot. Missouri Bot. Gard. 45: 216–224.

Johnston, I. M. 1930. Studies in the Boraginaceae. VIII. 1. Observations on the species of *Cordia* and *Tournefortia* known from Brazil, Paraguay, Uruguay, and Argentina. Contr. Gray Herb. 92: 3–88.

———. 1935a. Studies in the Boraginaceae X. The Boraginaceae of northeastern South America. J. Arnold Arbor. 16: 1–64.

———. 1935b. Studies in the Boraginaceae XI. (1) The species of *Tournefortia* and *Messerschmidia* in the Old World. (2) Notes on Brand's treatment of *Cryptantha*. (3) New or otherwise noteworthy species. J. Arnold Arbor. 16: 145–205.

Macbride, J. F. 1960. Boraginaceae. *In*: Flora of Peru. Field Mus. Nat. Hist., Bot. Ser. 13: 539–609.

Miller, J. S. 1988. A revised treatment of Boraginaceae for Panama. Ann. Missouri Bot. Gard. 75: 456–521.

———. 1989. Two new species of *Tournefortia* (Boraginaceae) from Colombia. Ann. Missouri Bot. Gard. 76: 619–622.

———. 1995. A new species of *Tournefortia* (Boraginaceae) from La Planada, Colombia. Novon 5: 188–189.

———. 1997. A new species of *Tournefortia* (Boraginaceae) from Peru. Novon 7: 265–267.